

Extrinsic optical fibre bending sensor for spine monitoring

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ABSTRACT

This paper presents the investigation of an extrinsic optical fibre bending sensor for dynamic spine bending measurement in 2D planes. The sensor consists of one input fibre and three output fibres, confined in two modified holders. The spine bending causes the tilting angle between these two fibres to change, thus modulating the light intensity propagating in each output fibre. The output ratio between the output fibres is applied to represent the bending angle as well as to provide signal referencing for the optical fibre sensor. The study shows that the fabricated sensor is capable of measuring the spine movement in flexion, extension and lateral directions continuously.

KEYWORDS

Optical fibre bending sensor; Spine monitoring; Intensity modulation sensor

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